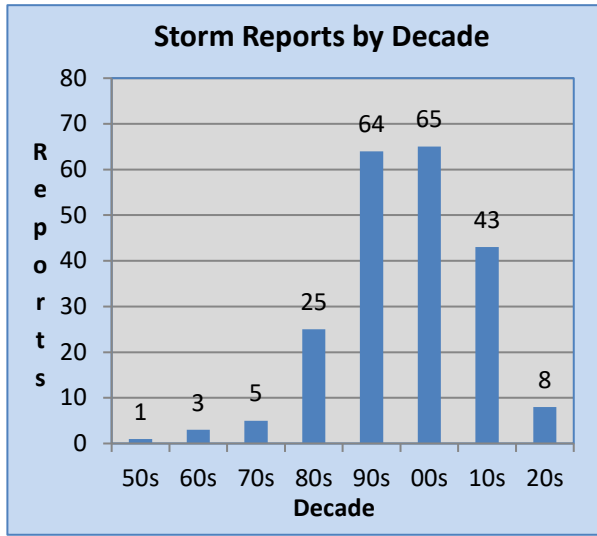


# Door County Severe Weather Facts (1950-2020)

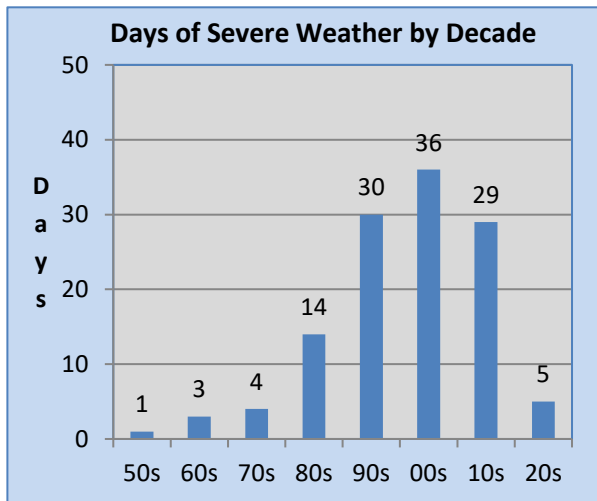
Updated: 2/1/21

## Storm Reports by Decade



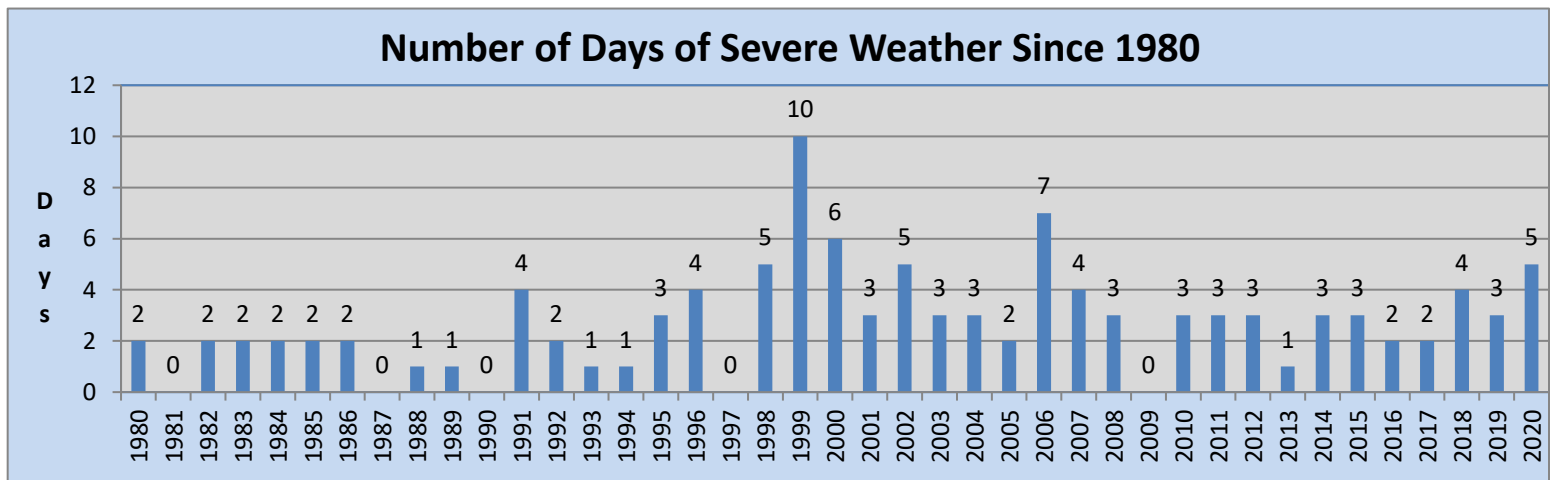
Since 1950 there have been 214 documented reports of large hail, damaging winds and tornadoes across Door County (see graph to the left). The population boom of the 1980s and 1990s combined with the SKYWARN program led to an increase in the number of reports of severe weather during both decades. Although the number of reports increased 88% from the 1980s compared to the 2011 to 2020 period, one can't say for sure there has been an increase in severe weather across northeast Wisconsin. One possible reason for the apparent increase in reports is that in some instances, multiple reports were received from a single location for the same storm due to more spotters today. Another reason for the increase in storm reports has been the focus by the National Weather Service (NWS) to improve warning verification. 1999 was the most active year with 20 reports, followed by 16 reports in 2007, 15 reports in 1998, 12 reports in 1991 and 10 reports in 2000. Since 1980, there were no reports during the following years: 1981, 1990, 1997 and 2009. In 2020, there were 8 reports of severe weather (six large hail and 2 high winds/wind damage reports).

## Severe Weather Days by Decade



In order to address the impact of multiple reports for the same storm, the data was examined by the number of severe weather days. Since the reports were sporadic during the 1950s through the 1970s, only data from 1980 to present was used. There has been an increase of 121% in the number of days of severe weather from the 1980s compared to the 2011 to 2020 period (see graph to the left). This trend can be attributed to the increase in population, technology advances in reporting severe weather and greater severe weather awareness by the public. Since 2010, Door County averages 3.1 days of severe weather per year. The long-term average from 1980 to 2020 is 2.8 days per year. The most active year was 1999 with 10 days of severe weather; followed by seven days in 2006, six days in 2000 and five days in 1998, 2002 and 2020. In 2020, severe weather on April 7<sup>th</sup>, July 18<sup>th</sup>, July 19<sup>th</sup>, August 20<sup>th</sup> and September 26<sup>th</sup>.

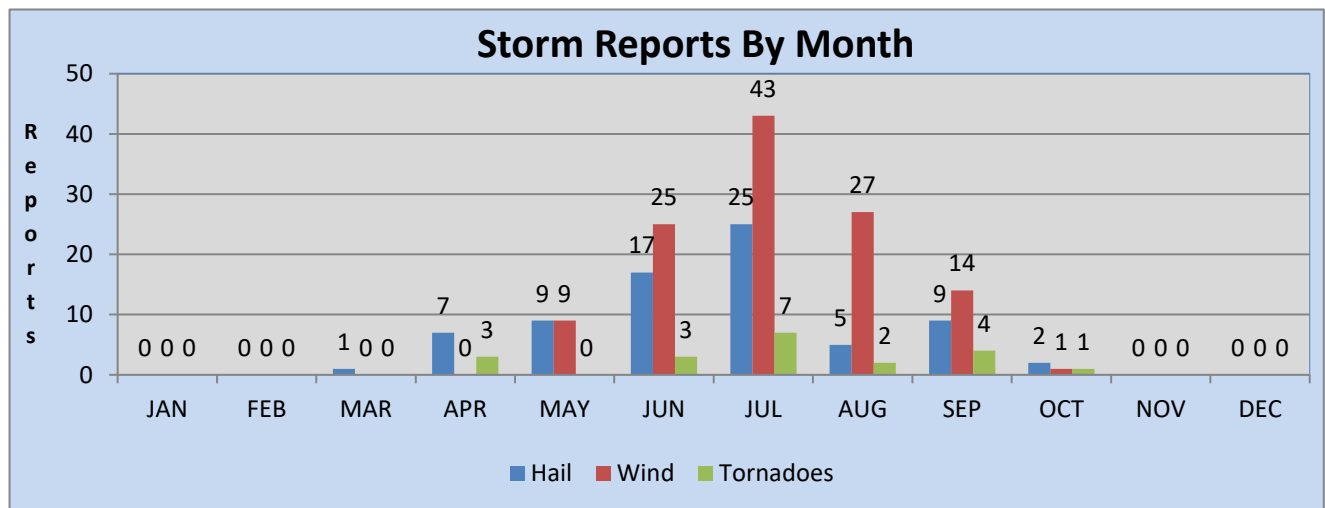
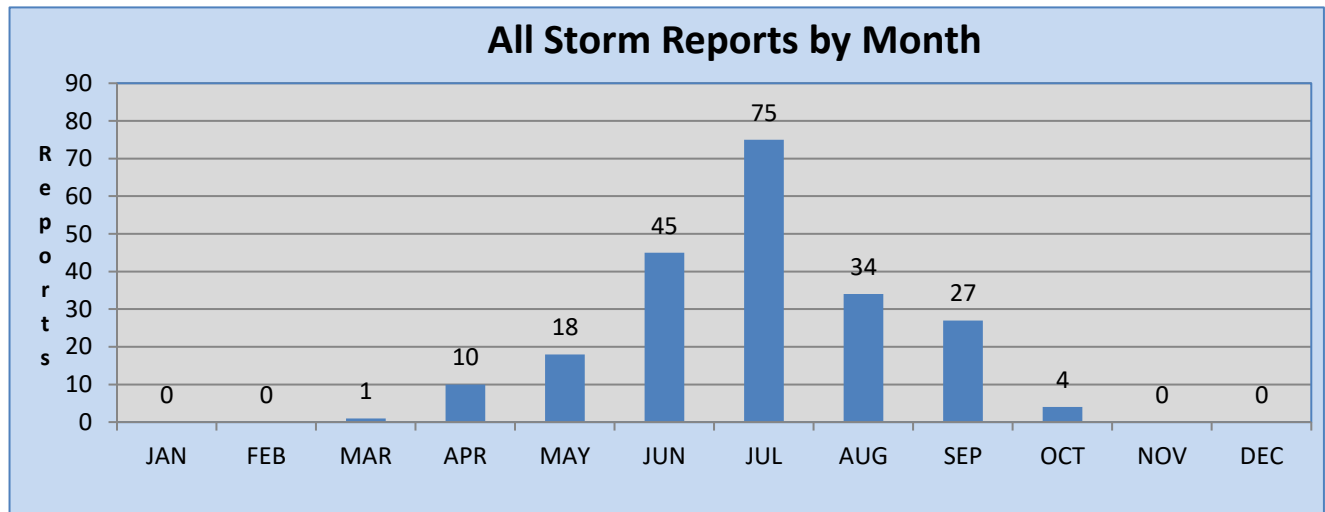
## Number of Days of Severe Weather Since 1980



# Door County Severe Weather Facts (1950-2020)

## Storm Reports by Month

Severe weather has been reported across Door County from March through October. The earliest documented report of large hail or damaging winds during the year occurred on March 29, 1998 when large hail three quarters of an inch was reported at Baileys Harbor. The severe weather season begins in earnest in May, although the stabilizing effects of the colder waters of the Bay of Green Bay and Lake Michigan can weaken severe storms during some events in the spring. Although the colder waters can weaken storms, it should be noted that a tornado outbreak occurred on April 22, 1970 when two EF2 tornadoes touched down across southern Door County. The severe weather season then peaks in July. June and July account for 56% of all severe weather reports during the year, and 95% of all storm reports occurred during the warm season months from May through September. Isolated reports of severe weather were noted in October. The latest report of severe weather during a given year occurred on October 17, 1984 when wind damage was reported in Sturgeon Bay, and again on October 17, 2016 when one inch hail was reported just northeast of Sister Bay. In 2019, a waterspout was reported near Deaths Door around 1 pm on October 15<sup>th</sup>.

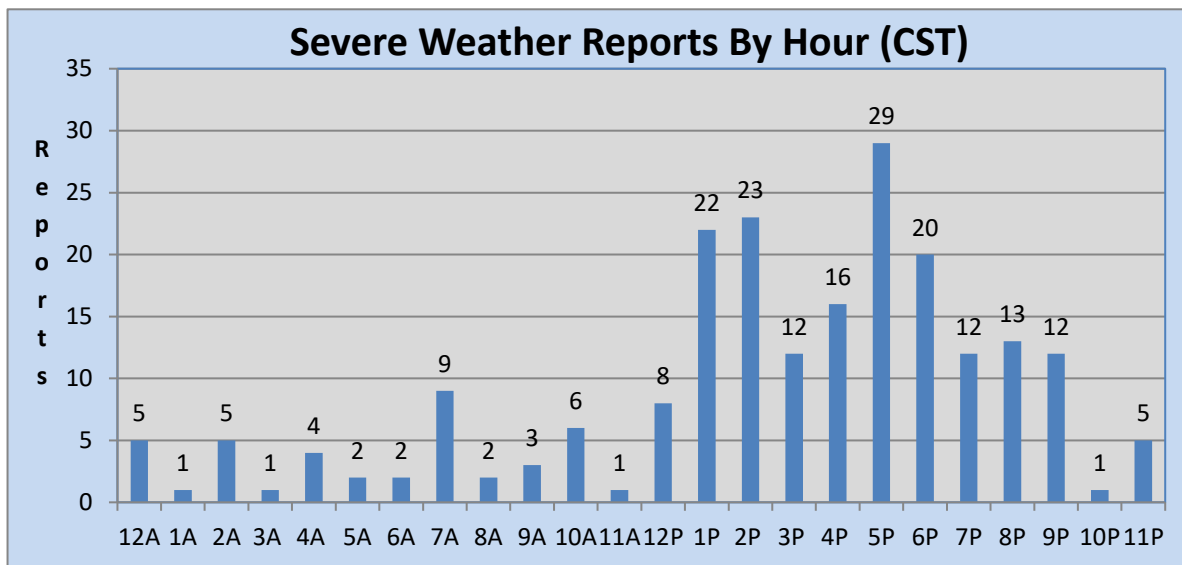
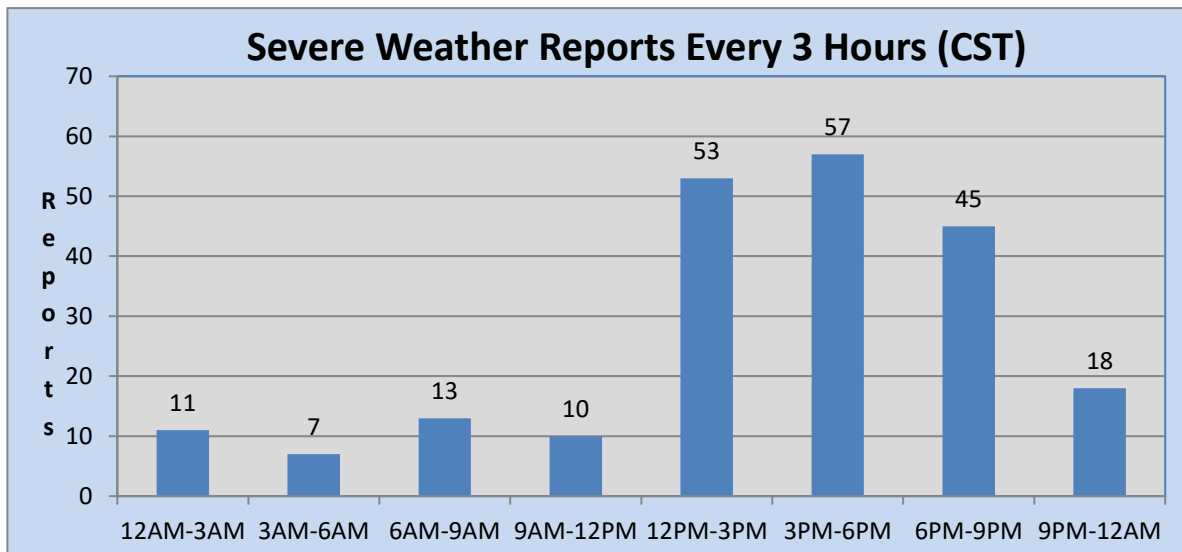


NOTE: The chart depicts storm type by month: (hail, wind/wind damage, tornadoes).

# Door County Severe Weather Facts (1950-2020)

## Storm Reports by Time of Day

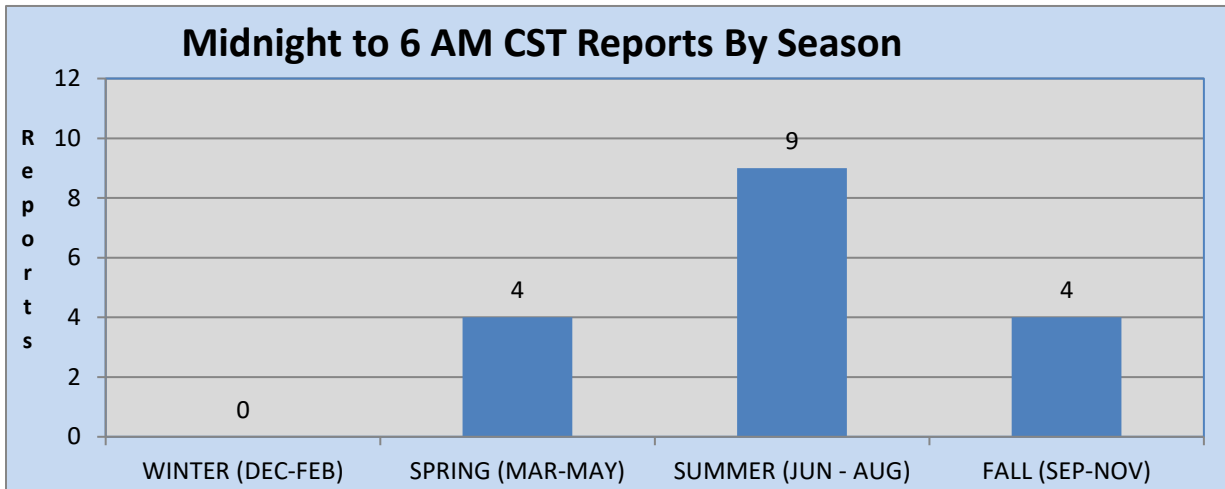
No matter the season, the afternoon and early evening hours are the peak time for severe weather across Door County. Sixty-nine percent of all severe weather reports occurred between 1 PM and 9 PM local standard time. Severe weather reports rapidly increased at 1 PM local standard time. In Door County, there were two separate peaks with the first one between 1 PM and 3 PM local standard time while the second peak occurred between 5 PM and 6 PM. The two different peaks in activity correspond to peak afternoon heating when the atmosphere is most unstable and timing of cold fronts moving through northeast Wisconsin. Scattered reports are noted during the evening and overnight hours during the summer months of June, July, and August. Between September and May, it is rare to get severe weather between 9 PM and 9 AM. There have been only seven reports which account for only four percent of the total reports across the county since 1950. In 2016, large hail was reported near Sister Bay at 3:25 AM CST on October 17<sup>th</sup>.



# Door County Severe Weather Facts (1950-2020)

## Severe Weather Reports Midnight to 6 AM CST

Overnight severe weather reports are most prominent during the summer (June through August) due to nocturnal convection along warm fronts, or from complexes of storms that develop across the Dakotas and Minnesota and roll through northeast Wisconsin during the early morning hours. The summer months account for 53% of all overnight reports during the year. In 2016, large hail was reported near Sister Bay at 3:25 AM CST on October 17<sup>th</sup>.



# Door County Severe Weather Facts (1950-2020)

## Door County Tornadoes and Waterspouts

Since record keeping began in 1950; there have been twenty documented tornadoes and waterspouts in Door County. It should be noted that waterspouts are usually under reported across the region since they may be well offshore and strike the opens waters where they are not seen. One tornado has been rated EF3 or greater intensity while four other tornadoes were rated EF2. The tornado that began as a large waterspout three miles southwest of Egg Harbor and then moved onshore to five miles southeast of Egg Harbor on August 23, 1998. Fourteen documented tornadoes and waterspouts were rated EF0 or EF1. The most documented tornadoes and waterspouts in a single year is three in 1999; followed by two tornadoes in 1970, 1991, 2000 and 2006. Tornadoes were reported in three consecutive years from 1998 to 2000. Tornadoes or waterspouts have occurred across Door County in 14 different years since 1950. Of those nine years, two of those years had more than one tornado in a year (1991 and 1999). In 2012, a waterspout was reported three miles west of Sister Bay and is the last waterspout or tornado to hit Door County. In 2019, a waterspout was reported near Deaths Door on October 15<sup>th</sup>. A tornado or waterspout strikes Door County occurs on average every three and a half years.



Picture by Mel Pfister – EF3 tornado near Egg Harbor 8/23/98

# Door County Severe Weather Facts (1950-2020)

## Door County Tornadoes and Waterspouts

Event		Date			Time		EF
#		Month	Day	Year	(CST)	Start / End Location	Rank
1		7	1	1956	12:05	5 E of Maplewood - 4 SE Institute	2
2		7	25	1966	18:20	0.5 E Maplewood	0
3		4	22	1970	21:00-21:10	1 N Casco - Rio Creek	2
4		4	22	1970	21:20-21:30	7 SE Maplewood	2
5		7	12	1973	07:30	Jacksonport	1
6		6	8	1985	20:00-20:30	Sand Bay - Sturgeon Bay	2
7		7	28	1991	10:15	Near Rock Island (waterspout)	0
8		7	28	1991	10:15	Near Washington Island (waterspout)	0
9		8	23	1998	17:30-17:44	3 SW Egg Harbor - 5 SE Egg Harbor	3
10		8	4	1999	16:05-16:15	21 ESE Sturgeon Bay (waterspout)	0
11		9	9	1999	14:55	3 N Sister Bay	0
12		9	19	1999	16:46-17:10	8 SE Sturgeon Bay	0
13		7	13	2000	14:55	1.5 NE Forestville	0
14		7	20	2000	12:58	2 W Sister Bay (waterspout)	0
15		4	23	2001	13:26-13:46	12 NW - 9 NW Sturgeon Bay (waterspout)	0
16		6	18	2006	16:43	3 NW Sister Bay	0
17		9	29	2006	09:20-09:55	Chambers Is. - 12 SE Cedar River (waterspout)	0
18		6	20	2007	16:06	6 NW Ellison Bay (waterspout)	0
19		9	18	2012	17:01	3 W Sister Bay (waterspout)	0
20		10	15	2019	13:00	Deaths Door	0

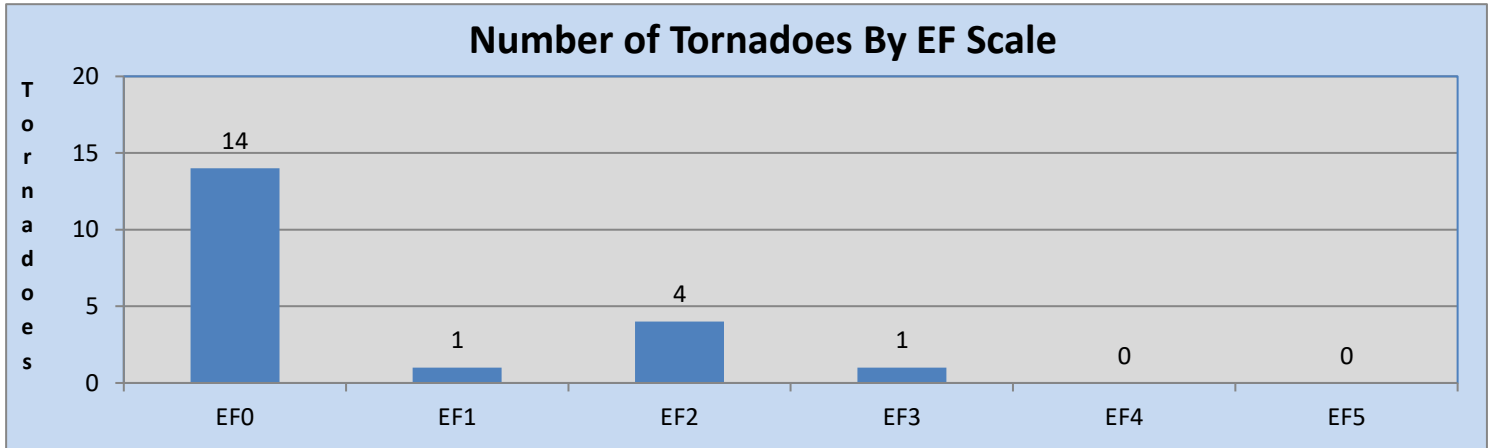
Additional tornado data can be found on the NWS Green Bay webpage at: <http://www.weather.gov/grb/severeclimate>

## EF2 or Greater Tornadoes in Door County

Event		Date			Time		EF
#		Month	Day	Year	(CST)	Start / End Location	Rank
1		7	1	1956	12:05	5 E of Maplewood - 4 SE Institute	2
2		4	22	1970	21:00-21:10	1 N Casco - Rio Creek	2
3		4	22	1970	21:20-21:30	7 SE Maplewood	2
4		6	8	1985	20:00-20:30	Sand Bay - Sturgeon Bay	2
5		8	23	1998	17:30-17:44	3 SW Egg Harbor - 5 SE Egg Harbor	3

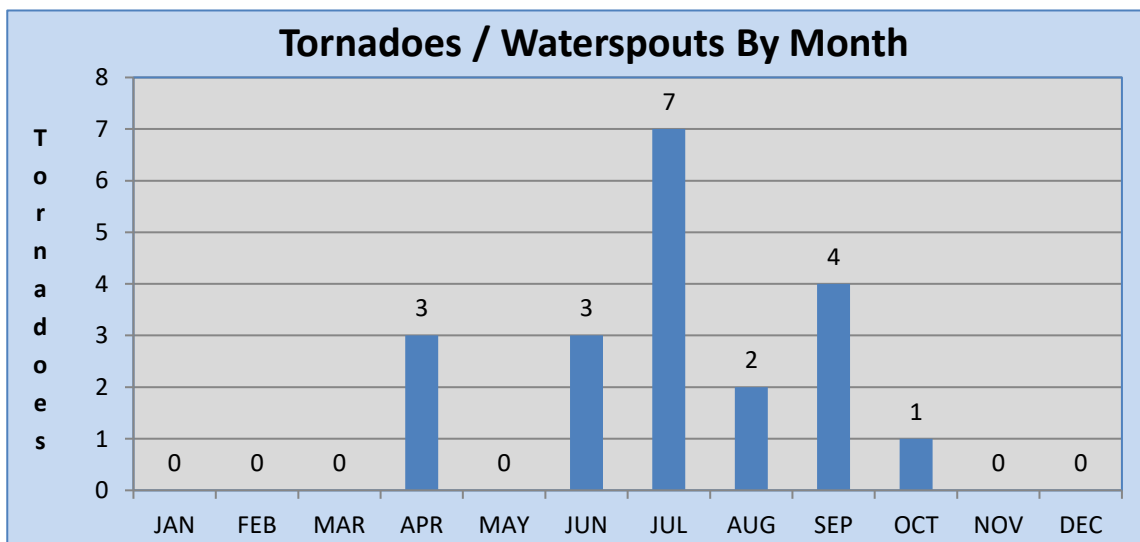
# Door County Severe Weather Facts (1950-2020)

The strongest tornado to strike Door County occurred on August 23, 1998 when an EF3 tornado struck near Egg Harbor between 5:30 PM and 5:44 PM CST. Four tornadoes were rated EF2 while there one was EF1 tornado. EF0 tornadoes or waterspouts accounted for fourteen of the twenty (70%) in the county. The last tornado or waterspout to hit the county occurred on October 15, 2019 when a waterspout was reported near Deaths Door. The last documented tornado to strike the county occurred on June 18, 2006 when a tornado touched down near Sister Bay at 4:43 PM CST.



## Tornadoes and Waterspouts by Month

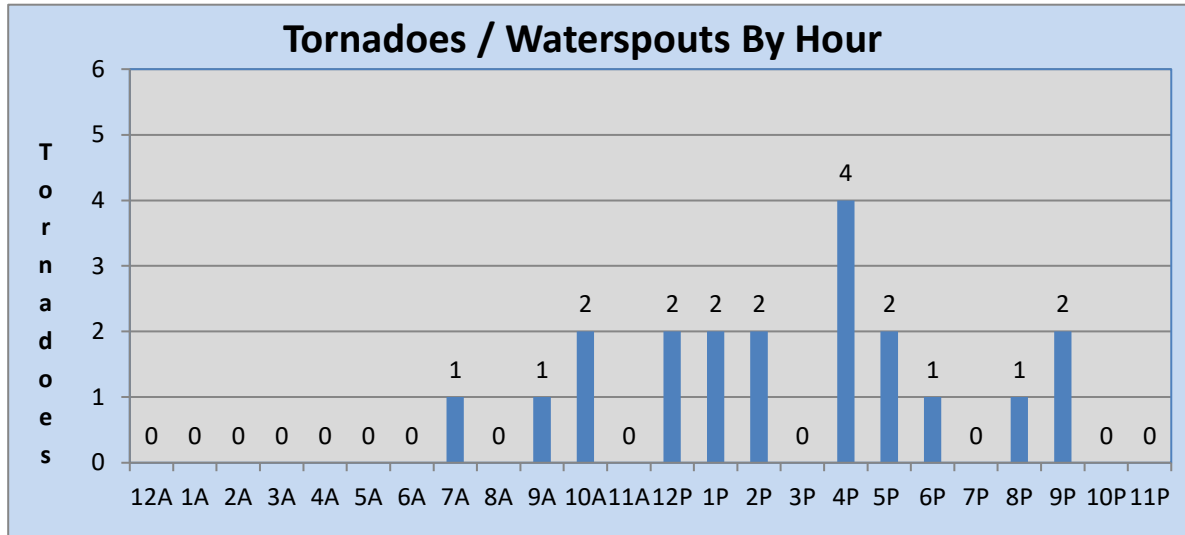
Tornadoes and waterspouts have been documented in Door County in April, June, July, August and September. The earliest documented tornado during the year occurred on April 22, 1970. On this day, two tornadoes were reported across the county. The first tornado moved from one mile north of Casco to Rio Creek. The second tornado touched down seven miles southeast of Maplewood. The tornado season peaks in July, then quickly ends by late September. The warm season, when the majority of tourist visit Door County (May through September), account for 80% of all tornado/waterspout reports during the year. The latest documented waterspout on record during the fall occurred on October 15, 2019 near Deaths Door. The latest tornado on record during the year occurred on September 19, 1999 when a tornado touched down eight miles southeast of Sturgeon Bay.



# Door County Severe Weather Facts (1950-2020)

## Tornadoes / Waterspouts by Hour

All five waterspouts reported were documented over the Bay of Green Bay. Bay with three of the waterspouts occurring during the morning. There was a rare morning EF1 tornado that struck Jacksonport at 7:30 AM CST on July 12, 1973. Overall, sixteen of the twenty (80%) documented tornadoes and waterspouts occurred between noon and 10 PM local standard time. There have been no reports of tornadoes or waterspouts from 10 AM to 7 AM local standard time.



## Predominant Storm Reports – Wind and Hail Only

During the spring, hail is the dominant weather event that is reported to the National Weather Service. Typically, the atmosphere is cold aloft in the spring to support large hail reaching the ground. Strong winds or strong winds resulting in wind damage were most prominent from May through September. For the entire convective season, six out of ten reports are high winds or wind damage compared to large hail.

Month	% Hail Reports	% Wind or Wind Damage	Month	% Hail Reports	% Wind or Wind Damage
Jan	0.0	0.0	Jul	36.8	63.2
Feb	0.0	0.0	Aug	15.6	84.4
Mar	100	0.0	Sep	39.1	60.9
Apr	100	0.0	Oct	66.7	33.3
May	50.0	50.0	Nov	0.0	0.0
Jun	40.5	59.5	Dec	0.0	0.0
			Year	38.7	61.3

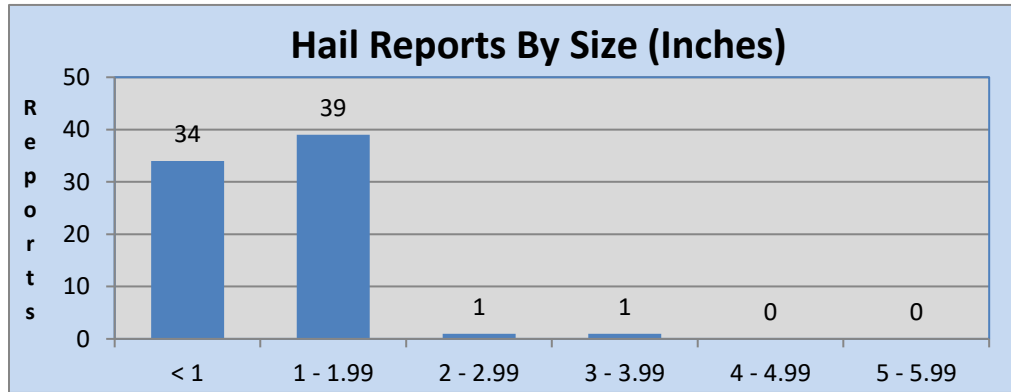
# Door County Severe Weather Facts (1950-2020)

## Large Hail in Door County

There have only been two documented reports of hail over two inches in diameter across the county. The largest documented hail stone in Door County was 3.0 inches in diameter which occurred at Baileys Harbor on September 26, 1998; and is the most recent report of a hailstone over two inches in diameter reported across the county. Overall, hail ranging in size from three quarters to one inch accounted for 81% of the documented large hail reports. Hail over two inches in diameter only accounted for 3% percent of all large hail reports.

### Hail over 2 inches

Month	Date	Year	Time	Location	Latitude	Longitude	Size
9	26	1998	0949	Baileys Harbor	45.07	87.13	2.75
8	9	2001	1250	1S Sturgeon Bay	44.82	87.38	3.00



# Door County Severe Weather Facts (1950-2020)

## Door County Summary

In Door County, the severe weather season begins in earnest May and wanes quickly by September. Severe weather usually occurs in the afternoon and early evening hours, with a secondary minor peak between midnight and 6 AM CST during the summer months. If you do experience severe weather, you are likely to see large hail early in the spring. Wind is the dominant severe weather report from May through September. Although rare, strong tornadoes can hit Door County and produce devastating damage as evidenced by the photograph (below) from the EF3 tornado on August 23, 1998. In the Green Bay forecast area which includes 22 counties from central to northeast Wisconsin, Door County ranks 16<sup>th</sup> in the total number of storm reports and 14<sup>th</sup> in the number of tornado reports since 1950.



This building (left picture) was on the south side of the tornado as it passed over Hwy 42 (Photograph by Jill Last, NWS Green Bay). There used to be a farm house and barn here (picture on right).

# Door County Severe Weather Facts (1950-2020)

## Green Bay Forecast Area Severe Weather Climatology Summary

Across the Green Bay forecast area which covers 22 counties in north-central and northeast Wisconsin, severe weather has been documented in every month except February. This includes a rare event on January 24, 1967 in which a line of thunderstorms produced damaging winds across Brown, Winnebago, and Outagamie counties during the early evening hours. Another rare late season thunderstorm produced one inch hail in Florence County on December 5, 2001 while one inch hail was reported four miles west of St. Nazianz in Manitowoc County on December 20, 1967.

Tornadoes have occurred from March through December, with an extremely rare tornado outbreak occurring on December 1, 1970. On this date four tornadoes were reported across central and northeast Wisconsin during the morning. A strong area of low pressure brought unseasonably mild temperatures and severe thunderstorms to portions of central and northeast Wisconsin as a cold front swept across the state. The first tornado was reported twelve miles southeast of Marshfield in Wood County around 7 AM CST while another tornado was reported in the town of Hull in Portage County around 9 AM CST. Later that morning, an EF2 tornado was reported in Waupaca and Shawano counties, from four miles southwest of Iola to near Marion and Pella. The last and strongest tornado occurred around 9:45 AM CST. The EF3 tornado travelled from Medina in southwest Outagamie County to far southeast Shawano County, destroying about 20 barns and five homes.

Here are the strongest documented tornadoes in the Green Bay forecast area which covers 22 counties in central, north-central and northeast Wisconsin.

### EF4 Tornadoes

Event	Date			Time		Tor in GRB Service Area
#	Month	Day	Year	(CST)	Start / End Location	County or Counties
1	6	25	1950	21:00	1 W Woodboro - 5 NE Rhinelander	Oneida
2	9	26	1951	15:45-16:08	9 SSW Amherst - 2 SW Bear Creek	Portage-Waupaca
3	4	3	1956	13:45-13:53	Berlin - 2 W Omro	Waushara-Winnebago
4	8	19	1968	16:10	3 SW Pound - Marinette	Marinette
5	4	21	1974	14:40-15:08	5 S Ripon - Oshkosh	Winnebago
6	4	27	1984	15:20-15:40	1 NE Winneconne - Freedom	Winnebago-Outagamie
7	7	5	1994	15:43-15:55	2.5 NW Maribel - 0.5 W Cooperstown	Manitowoc

# Door County Severe Weather Facts (1950-2020)

## Green Bay Forecast Area Severe Weather Climatology Summary

The state record for the largest documented hail stone in Wisconsin occurred in Wausau on May 22, 1921. The hailstone measured 5.7 inches in diameter. More recently, a hailstone of 5.5 inches in diameter was reported in Port Edwards in southeast Wood County on June 7, 2007.

Hail	Month	Date	Year	Time (CST)	Start / End Location	County
5.70	5	22	1921	??	Wausau	Marathon
5.50	6	7	2007	15:23	Port Edwards - Wisconsin Rapids	Wood
4.50	7	16	1997	14:15	8 NE Merrill	Lincoln
4.25	5	22	2011	14:35	0.5 E Redgranite	Waushara
4.25	5	22	2011	15:05	0.8 NW Winchester	Winnebago
4.00	3	29	1998	12:25	St. John	Calumet
4.00	4	25	2008	17:50	0.8 SW Kings	Lincoln
4.00	7	1	2006	14:31	1 N Hayes - Suring	Oconto
4.00	8	2	2015	13:24	0.5 E Abrams	Oconto
4.00	8	2	2015	13:32	2.8 S Brookside	Oconto
3.50	6	8	2000	22:30	10 W Middle Inlet	Marinette
3.25	7	1	2006	15:05	Oconto - 6 SE Oconto Falls	Oconto
3.00	8	2	2015	14:06	Rudolph	Wood
3.00	7	1	1956	11:00	5 E Green Bay	Brown
3.00	8	9	2001	12:50	1S Sturgeon Bay	Door
3.00	6	7	2007	15:50	5 W Langlade	Langlade
3.00	4	18	2002	15:30	7 WSW Bloomville - 7 NW Bradley	Lincoln
3.00	7	1	2006	19:29	Branch - Manitowoc	Manitowoc
3.00	8	19	1968	16:15	2 E Harmony	Marinette
3.00	7	19	1963	15:00	4 S Rhinelander	Oneida
3.00	5	22	2011	17:35	Plover	Portage
3.00	6	5	1999	18:35	3 S - 8 SE Eagle River	Vilas
3.00	7	27	1989	10:50	1 N Oshkosh	Winnebago